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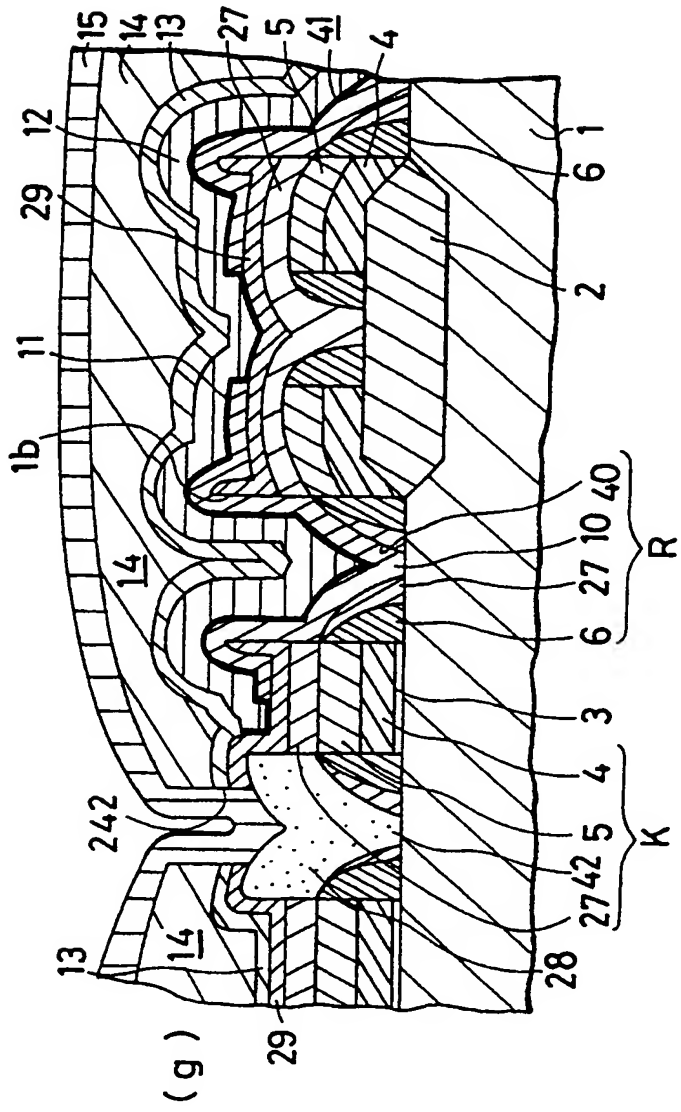
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(54) **Method of manufacturing a semiconductor memory.**

(57) A method of manufacturing a semiconductor memory includes the steps of, on a semiconductor substrate having underlayer wiring which is composed of a plurality of gate portions provided with side walls and a diffused region between the gate regions, i) forming a layer insulating film which is smaller in thickness in the diffused region than the side walls of each of the gate regions and which is made of a material etched more easily than the material of the semiconductor substrate; ii) depositing a conductive layer of a material etched more easily than the layer insulating film, over the entire surface of the layer insulating film; iii) removing the conductive layer simply except a portion where a contact hole is to be formed in the diffused region, by etching with a pattern film for forming the contact hole; iv) depositing an insulating film and a pattern film for forming the contact hole over the entire surface again; and v) removing the insulating film, the remaining conductive layer and the layer insulating film by etching one after another to form the contact hole extending to the diffused region in self-alignment.

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FIG.1



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EUROPEAN SEARCH REPORT

Application number

EP 90 31 4415

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.)
P,X	DE-A-4 007 582 (K.K. TOSHIBA) * Column 8; figures 3b-9b *	1-4	H 01 L 27/108 H 01 L 21/82
P,Y	--	6-10	
P,Y	PATENT ABSTRACTS OF JAPAN, vol. 14, no. 292 (E-944)(4235), 25 June 1990, & JP-A-2 094 554 (TOSHIBA CORP.) 5 April 1990 * Abstract; figure 9 *	6-10	
Y	PATENT ABSTRACTS OF JAPAN, vol. 11, no. 288 (E-542)(2735), 17 September 1987, & JP-A-62 086 853 (FUJITSU LTD) 21 April 1987 * Abstract *	1-4	
Y	EP-A-0 317 160 (FUJITSU LTD) * Column 4, line 56; column 6, lines 9-11; figures 5-8 *	1-4	H 01 L
X	EP-A-0 337 436 (NEC CORP.) * Figures; abstract *	5	
A	PATENT ABSTRACTS OF JAPAN, vol. 13, no. 110 (E-728)(3458), 16 March 1989, & JP-A-63 281 457 (HITACHI LTD) 17 November 1988 * The whole abstract *	5	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27th August 1991	Examiner SINEMUS M.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,
namely claims:
.
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,
namely:

See sheet -B-

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,
namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,
namely claims:



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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-4,6-10: Covering contacting side with conductive layer and completely removing the same later.
2. Claim 5: Deposit conductive layer and using the same as buried layer for contacts.